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ASSESSMENT OF EPA HAZARDOUS RANKING SYSTEM PROCESS FOR THE SAEGERTOWN INDUSTRIAL AREA

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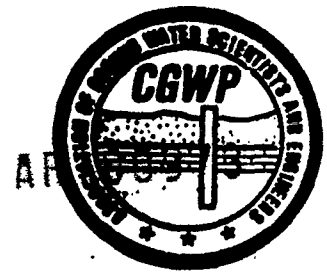

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INTRODUCTION

After extensive study of (a) the information listed in the references of the Hazardous Ranking System (HRS), (b) other information available to me from DER files and the files of Attorney Paul Burroughs, and (c) limited new data collected by me during July and August, 1988, it is my opinion that the HRS for the Saegertown Industrial Area should be revised in light of these new data. Disagreement with the existing HRS stems primarily from the fact that the trichloroethylene (TCE) contamination of Saegertown Borough well #2, which is the focal point of the HRS, occurred in 1980. The HRS was completed in 1985 and was based primarily on data gathered in 1980-1982. Continued monitoring has shown that the quality of water in Borough well #2 improved rapidly after 1980 and the well was placed back into service in 1984. A second area of concern that warrants re-evaluation in light of current data and procedures is the interpretation of the risk of excessive lead concentrations in Borough water wells. A third area warranting re-evaluation is the extent to which the GATX site is a threat to the Saegertown Borough water wells.

In order to (1) introduce additional information, some of which was collected since the HRS was completed in 1984, and (2) explain the basis for disagreement with the interpretation of some of the data used in the HRS, I will go through the HRS section by section, adding new data and my comments. Prior to doing that, however, some background information on the general setting for the Saegertown Industrial Area HRS and my comments will assist the reader.

Description of the Area of Study

The location of the area referred to in the HRS and this assessment is shown in Figure 1. Background information on the geology and hydrogeology of the site can be found in several of the references (e.g., 3, 16, 19, 20, 22) It is sufficient here to state that Saegertown Borough wells 1, 2, and 3 draw from an aquifer comprised of sand and gravel interlayered with finer unconsolidated sediments. Underlying bedrock of relatively low groundwater yield occurs at a depth of about 60 ft. French Creek serves as a regional groundwater discharge zone and , in general, groundwater in the unconsolidated aquifer beneath the Saegertown Industrial Area follows the topography as it flows from east to west toward the creek. Other than a private well located at the Saegertown Bottling plant (see Figure 1), water use in Saegertown proper appears to be supplied by the Borough water supply.

The Saegertown Borough water supply is provided by four high-yield wells which tap sand and gravel aquifers. The location of these wells is shown on Figure 1. Note that Borough well 4 is located ~1.7 miles from the other 3 Borough wells and is on the west side of French Creek in a different groundwater drainage basin. This well was put into service in 1987, after completion of the HRS for the Saegertown Industrial Area.

Key locations in the Saegertown Industrial Area (SIA) such as Saegertown Manufacturing Company (SMC), the Spectrum plant, and the former GATX railcar cleanout facility are also shown on Figure 1 The Crawford County Home, located about 1 mile from the Saegertown Industrial Area (SIA) is also shown. The Home has its own well(s) and is not connected to the Saegertown Borough water supply.

The locations of other wells which will be referred to in this report are shown on Figure 2. Note that near Borough wells 1 , 2 , and 3 and the Milk Plant well there are also observation wells. These are most likely test holes that were drilled prior to drilling the present production wells. The only wells shown on Figure 2 which appear to have been equipped with operable pumps during the time span of the monitoring referred to in this assessment are Borough wells 1, 2, and 3 and the Milk Plant well. Samples from these wells were presumably collected from the pump system. Other wells, however, were most likely purged and sampled by using a bailer. Wells which are not in regular production are usually agitated by the surging action of the bailer and suspended sediment is often drawn into them. In the case of wells having steel casing, the bailing is also apt to result in rusted casing material being drawn into the water. As a result, samples collected from wells which are not pumping are apt to contain suspended sediment.

The importance of this will be pointed out later in discussions of the reported metal content of the water from these wells.

Another water well which will be referred to in this report is the Saegertown Bottling well, located due west of the GATX portion of the SIA (#19 on Figure 2).

The exact boundaries of the SIA are not clearly defined in the EPA HRS . The designation of this particular area as the SIA, as far as I know, comes from the EPA HRS document.

More detail regarding the hydrogeology of the study area will be presented in the following assessment of the EPA HRS document for the Saegertown Industrial Area. The HRS document in included in its entirety in the Appendix.

THE HRS

The HRS for the Saegertown Industrial Area was completed on November 20, 1985, with the quality assurance check conducted on March 20, 1987. In general, there are potentially three areas of concern for hazardous waste sites: (1) potential harm to humans or the environment due to migration of hazardous substances from a source area by way of groundwater, surface water , or air, (2) potential harm from substances that can explode or cause fires, and (3) potential harm from direct contact with hazardous substances at the source area. Of these three areas of potential concern, only the first, *migration of hazardous substances from the source area* applied to the Saegertown Industrial Area (SIA). And of the three possible modes of migration -- ground water, surface water, and air -- only the ground water route was applicable to the SIA. Thus, the HRS and these comments on the HRS focus on the potential for hazardous substances in the ground water to migrate from the source area to the Saegertown Borough water wells.

A list of references used by the EPA in conducting the HRS are shown at the end of this report. The first 15 references are the ones used and listed by the EPA in the HRS. References 16 - 28 are additional references which I have used in making my assessment of the HRS. Several of these additional references were not available at the time the HRS was conducted nearly

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three years ago and thus they may have an important bearing on reassessment of the HRS for the Saegertown Industrial Area.

Table 1 shows the Ground Water Work Sheet from the EPA HRS dated 11/20/85. As can be seen, there are 7 sections to this work sheet. Sections 1 through 5 provide the numerical scores which in turn provide the basis for the calculations contained in sections 6 and 7. The first 5 sections actually represent only 4 factors or scores, however, inasmuch as sections 1 and 2 are used in an either/or manner. If a release of contaminants from a potential source has been observed, section 1 is used. If no release has been observed from a potential source, then section 2 is used.

Following the Ground Water Route Work Sheet in the HRS (and the other work sheets which were not applicable to this site), a section entitled DOCUMENTATION RECORDS FOR HAZARDOUS RANKING SYSTEM follows. Page 2 (shown here as Table 2) of the documentation section documents the rationale for the score of 45 in section 1 (Observed Release) of the Ground Water Work Sheet.

Section 1. Observed Release (TCE)

The first paragraph of the Observed Release documentation (Table 2) indicates that high concentrations of TCE and 1,1,1,-TCE were found in Borough Well #2 in November, 1981. This is correct. As shown in Table 3 and Figure 3, Borough Well #2 did have high concentrations of TCE which were discovered in April , 1980. Note, however, that the concentration of TCE in Borough Well 2 (BW2) dropped off rapidly and by 1987 was only 3 parts per billion (ppb). In March , 1984, the TCE content of BW2 had dropped to the point that DER approved putting it back into service (reference 17) and it has been in service ever since, with the possible exception of short shutdowns for maintenance. Although a potential source area of the TCE and 1,1,1-TCE was identified at or near the site of a 1979 oil spill which was subsequently cleaned up (references 3, 19, 20), analysis of soil samples collected from this area in November, 1981, showed no detectable TCE or 1,1,1-TCE (reference 21). Samples collected from 2 monitoring wells and the Milk Plant well on the Spectrum property on July 21, 1988, show lead concentrations of <0.005 mg/l and TCE and 1,1,1-TCE concentrations of <2 ppb (Table 8, reference 27). Inspection of water analyses carried out by the Saegertown Borough show that TCE content of the Borough water supply is now below the EPA maximum contaminant levels (MCL), which for TCE is 4.5 ppb (references 24 & 25 , Table 3, Figure 3).

Thus, as is indicated by several references (17, 19, 20, and Table 3 and Figure 3), the contamination of BW2 in 1980-81 was the result of a spill or a leak which ended abuptly several years ago. One hydrogeologist, Ebaugh, who was hired by Saegertown Borough, indicated that the spill or cessation of a leak occurred in late 1979 and that no more than 10 to 100 gallons of TCE would have been required to cause the contamination levels observed (reference 20). The fact that both the source of the 1980-81 TCE contamination and the contaminant plume no longer exist (i.e., the contaminant has passed through the system) makes it highly questionable as to whether the HRS should indicate an observed release (which indeed there was ~8 years ago) is being evaluated. If , indeed, the purpose of the HRS is to identify hazardous waste sources which are or could potentially contaminate the ground water, then indicating an Obsrved Release which data show is no longer present seems inappropriate. Thus, based on considerable data collected over the ~ 8 years since the contamination of BW2 was discovered, there no longer appears to be a basis for using an Observed Release of TCE in an HRS ranking of the SIA.

Although it was concluded by both the DER hydrogeologist (Sterba) and the hydrogeologist hired by the Borough (Ebaugh) that the TCE contamination which did occur in Borough well #2 in 1980 did not come from the GATX site (references 3, 19, 20), this possible source of TCE was investigated further by NUS in 1984 . In their report on the GATX site NUS concluded , however, that "current samples provide little evidence of TCE or any other organic groundwater contaminant" (reference 16, p. 7-11).

Observed Release (Lead)

The second paragraph of the Ground Water Route documentation (Table 2) deals with the Observed Release of lead into the groundwater. It must be pointed out that high lead concentrations have **not** been reported in the Saegertown Borough water supply wells to the best of my knowledge (see Table 3)(reference 25). Indeed, elevated lead levels have been detected in many samples of groundwater collected in the SIA, however, the validity of these lead values is highly questionable because these samples were not filtered prior to acidification and analysis by the labs (references 19, p. 4 & 5, and 16, p. 7-1). As indicated by NUS in their report on the GATX property (reference 16, p. 7-1) , "It is likely that a significant proportion of the metal concentration in these samples (water samples from GATX monitoring wells and Saegertown Borough observation wells) are not dissolved, although actual soluble metal concentrations cannot be

ascertained from available information." The hydrogeologist (Ebaugh) hired by the Borough also stated that even though samples from monitoring wells in the SIA were reported in DER analyses to contain high levels of metals, "As samples weren't filtered prior to analysis, however, these values are suspect" (reference 19, p. 4).

In their report (reference 16) NUS first indicates the likelihood that much of the metal content reported in the monitoring well samples was actually from the suspended sediment (see quote above), which is a statement with which I agree based on my own experience. They go on to state, however, that "The high levels of metals reported in (Saegertown) observation wells (beyond solubility limits in some cases) may suggest the presence of suspended particulates in these samples. Such particulates may provide an adsorptive; surface for metals, thereby reducing concentrations of dissolved metals" (p. 7-3). I strongly disagree with this last sentence. In the first place, it is contradicted by the sentence in the quote which precedes it (i.e., if the reported metals levels are in some cases **above** the solubility limit then the metals dissolved in the water must be **less** than reported, not more). Secondly, to state that suspended sediment which is drawn out of an aquifer along with groundwater which it has been submerged in and in contact with over a long period of time should absorb metals from that same water once it has been withdrawn from the well makes no sense. It seems reasonable that some sort of equilibrium exists in the aquifer between the metals content of the sediment and the groundwater surrounding it due to the long contact time between them. This is not to say that the sediment does not contain a higher concentration of metals than the groundwater, but rather, that there is an equilibrium between these two concentations in the groundwater and the sediment. For the sediment to suddenly release metals into the water withdrawn from the well would require some change in the equilibrium which existed before the water and sediment were withdrawn from the well. Ignoring very small changes in pH which might take place once the sample is withdrawn from the well, this change in equilibrium would most likely take place when the sample containing the water and suspended sediment is acidified in the lab prior to analysis. It is my understanding that labs routinely began acidifying samples for metals analysis around 1979-1980 and that labs do not normally filter the samples prior to acidification (i.e., if removal of suspended sediment is to take place prior to acidification it is normally done by the sample supplier by filtering the sample). DER lab sheets for samples collected in 1980 from the SIA do state specifically that samples for metals analysis were acidified prior to analysis. Thus, samples which contain suspended sediment are much more likely to indicate metals

concentrations that are **higher** than the actual metals concentration in the water at the time of sampling.

Most if not all of the samples collected from the SIA that were referred to by EPA in making their HRS, and the subsequent samples collected by NUS in 1984, were collected from wells not equipped with operating pumps. Thus, these samples were most likely collected by using bailers. The surging action of bailers is known to frequently provide samples containing suspended sediment, and because these samples were not filtered prior to acidification and analysis, it seems highly likely that the reported metals content for these samples does not accurately indicate the metals content of the groundwater. Thus, these analyses do not provide a reliable or accurate basis for stating that there has been an observed release of lead into the groundwater in concentrations which exceed drinking water standards, which is 0.05 mg/l.

More reliable data on the concentration of lead in the groundwater is available, however, from samples collected from the operating production wells (BW1, BW2, BW3). When operating, these wells provide samples via the pump system which do not contain suspended sediment. Thus, analysis of these samples provides an accurate picture of the metals content in the water being drawn from the aquifer by the Borough wells. Table 3 summarizes the lead content of water drawn from Borough wells 1 and 2. Note that none of the lead values approach the MCL for lead in drinking water.

Samples were also collected from two monitoring wells and the Milk Plant observation well on the Spectrum property and from the Saegertown Bottling plant on 7/21/88. These samples, which were filtered prior to acidification, all contained <0.005 mg/l lead (Table 8).

Even in their report where they listed the high lead values in **unfiltered** samples collected from monitoring wells and Borough **observation** wells, NUS (reference 16) states that "It is presumed that Saegertown Borough officials sample the finished water supply on a regular basis and would be aware of any potential problems with finished water quality." (p. 7-3). Indeed the Borough officials have had water from their wells analyzed , and as is shown by the available data (Table 3), elevated lead levels have not been detected.

Another source of data on the GATX site is a study conducted by Todd Giddings and associates, dated 12/21/84 (reference 28). In this study 13 soil borings about 15 feet deep were made and soils were collected using a

split spoon sampler. Twenty two soil samples were leached with reagent quality water as per ASTM Method A . Results of the analyses of the filtrate from these samples show a maximum lead content of <0.3 mg/l or <0.0012 mg/g. Although water samples were collected from several of these boreholes by bailing, these samples were also not filtered prior to acidification and analysis, except for one, which showed a lead content of <0.1 mg/l. The Giddings report concludes that "The results of the laboratory soil analyses did not exceed the EP toxicity concentrations set forth in 40 CFR Part 261.24, thus no further action was inititated." (reference 28, p. 7) In order to be classified as a hazardous waste the maximum allowlable concentration of lead in the filtrate of leached solid waste is 5 mg/l according to 40 CFR Part 261.24, which is more than 10 times the maximum concentration reported for soils on the GATX site by Giddings.

Discussion of Observed Release Section

Thus, it is my opinion that the data presently available and discussed above do not provide sufficient basis for indicating an observed release of lead into the groundwater. The operating Borough production wells, which were most likely the only source of sediment free samples at the time the sampling was done, and which are the point of interest in terms of a target for potential hazardous waste releases, have repeatedly shown lead concentrations which are below the MCL for drinking water (see Table 3). And likewise, the TCE content of the Borough production wells are less than 4.5 ppb (Table 3). Thus, I do not believe there is a basis , given the data available in 1988, for concluding that an observed release of contaminants presently exists in the SIA with respect to the Saegertown Borough water wells.

In thinking about the SIA as a potential source of contaminants in Borough well 1 and 2, it is useful to consider the approximate velocity at which groundwater moves in this area of the aquifer. Using hydraulic gradient values from Ebaugh's maps of the water table (Figures 4 and 5), a range of hydraulic conductivity for the aquifer of 1000 to 10,000 ft/day, and a specific porosity value of .23, estimates of the seepage velocity were made using Darcy's law. With Borough well #2 pumping continuously, the estimated seepage velocity of water beneath the SIA is on the order of 20 to 400 ft/day. With Borough well #2 not pumping, the estimated seepage velocity is in the range of 12 to 120 ft/day. Because Borough well #2 is believed to have been pumping continuously at the time the data were collected for Figure 4, and because well #2 probably only pumps several hours per day when it is in normal production, the actual range of seepage velocity probably lies between the upper and lower values shown here (e.g.,

between 12 and 400 ft/day. Even though this is a wide range of estimated flow velocity, it does indicate relatively rapid flow. Even at 12 ft/day groundwater in the Spectrum/SHC portion of the SIA should reach Borough well #2 in not more than about 40 days. Groundwater flow beneath the GATX area is also within the estimated range of velocities shown. An important point, then, is that if there were contaminants entering the groundwater within the SIA they should reach the Borough wells in a matter of tens of days, or at most, a few months , if indeed the flow is in that direction (water beneath the GATX site does not appear to flow to Borough wells). And keep in mind that the GATX site was abandoned ~1965, some 23 years ago. Thus, if any contaminants from this area were going to contaminate the Borough water supply it would have happened years ago. Thus the HRS for the SIA is not a case of trying to intercept a plume from the SIA before it reaches the Borough wells. Or, more directly to the point of this portion of the HRS, if contaminants were entering the groundwater from the SIA and flowing toward the Borough wells or the Saegertown Bottling well, analyses already at hand from these wells would indicate the presence of that contamination, and , in fact, they do not.

Section 2. Route Characteristics

Page 3 of the HRS documentation section (Table 4) deals with Route Characteristics, which is section 3 of the Ground Water Work Sheet (Table 1). It is unclear why this documentation section was filled out since an Observed Release was reported in section 1 of the worksheet (Table 2) and the worksheet calls for designating **either** an Observed Release **or** Route Characteristics if there was no observed release. Nonetheless, the description of the aquifer provided in Table 4 appears accurate based on the information at hand except that Saegertown no longer obtains its water from 3 wells, but rather 4 . In 1987 a fourth well which had been test pumped at 450,000 gallons per day (gpd) was put into service. The addition of this well is of great importance because it now gives the Borough a major source of water in a different groundwater drainage basin. This new well (see Figure 1) is located ~1.7 miles west of French Creek, which is a regional groundwater discharge zone. Thus, water beneath the SIA could not reach Borough Well 4.

Section 4. Waste Characteristics

Section 4 of the HRS Work Sheet evaluates Waste Characteristics. The documentation page for this section is shown in Table 5. The basis for listing 1,1,1-TCE, TCE, and lead as the waste compounds is somewhat questionable in light of data currently available. As indicated earlier, the

pre-1988 values obtained for lead in samples collected from wells other than the Borough production wells 1, 2, and 3 are suspect because the samples are reported to not have been filtered to remove suspended sediment prior to acidification. For example, it is important to note that the samples from Borough wells referred to on page 7-1 of the NUS report (reference 16) are from **observation** wells, not the production wells. The observations wells were most likely sampled by bailing and the samples were not filtered and thus, according to NUS, "filtered monitoring well samples were not available and the exact proportion of dissolved, more mobile metals in monitoring wells cannot be ascertained at present. " "It is likely that a significant proportion of the metal concentrations in these samples are not dissolved, although actual soluble metal concentrations cannot be ascertained from available data "(reference 16, p. 7-1).

Recent samples collected from two monitoring wells and the Milk Plant observation well on the Spectrum property, which **were** filtered before acidification and analysis, show that the groundwater there contained <0.005 mg/l lead (Table 8, reference 27).

More important, the samples from the Borough **production** wells , which are the focus and target of concern, do not show elevated lead concentrations (Table 3). Thus, the emperical evidence is that there is not a lead problem in the target area, the Borough wells. Neither is there a lead problem indicated in the Saegertown Bottling well which is located just 500 ft west of the GATX site (see Figure 2 and Table 6).

Thus, the data currently available for lead content in groundwater do not appear to provide a sound basis for using lead as the compound on which the toxicity and persistence score for the wastes should be established .

There have been high concentrations of lead reported in some soil and sludge samples from the GATX area, however. These data appear valid even though the 22 leached samples from 13 soil borings conducted in 1984 (reference 28) do not confirm the high lead values. The presence of excessive concentrations of lead in some soil samples, however, does not automatically mean that there will be excessive concentrations of lead in the groundwater which is beneath these soils. The lead data from groundwater samples collected at the GATX site most likely overestimate the concentration of lead in the groundwater for reasons discussed above (lack of filtering to remove suspended sediment before the samples were acidified). Samples which were not affected by the lack of filtering (i.e. did not contain suspended sediment) would be those from the Borough production wells 1, 2, and 3, and from Saegertown Bottling, which lies

directly west of the GATX site and in its flowpath. As shown in Tables 3 and 6, analyses from these wells show lead levels which are not excessive. Thus, again, the imperical evidence is that the aquifer is **not** contaminated with lead.

Although it at first may seem surprising that if there are high concentrations of lead in some of the soils there is no solid evidence of high concentrations of lead in the underlying groundwater, recent research conducted under my direction has verified that the groundwater beneath high-lead soils may not be contaminated. A study of the lead content of the soil at a skeet and trap shooting range in Crawford County showed that the average lead content of the solute obtained by leaching the upper 15 cm of the soil with deionized water was 500 mg/l (reference 23). Lead shot were plainly visible in the upper few cm of the soil. A study of the groundwater beneath these soils, however, showed that the lead content of the groundwater (water table <4 ft below ground) was not significantly higher than background concentrations in the area and did not exceed drinking water standards. The lack of lead content in the groundwater beneath the lead-contaminated soils was attributed to cation exchange and precipitation of insoluble lead compounds (reference 23).

Section 5: Targets

Section 5 of the Ground Water Route Work Sheet deals with Targets. Variables considered and documented in Table 7 are (1) Groundwater Use, (2) Distance to Nearest Well, and (3) Population Served by Ground Water Wells Within a 3-Mile Radius.

In documenting the first variable, Groundwater Use, EPA states that the "Saegertown Muncipal Water Supply system is using the alluvial/glaciofluvial-glaciolacustrine aquifer, consisting of sands and gravels of the glacial drift. There is no other source of potable water available." On that basis a value or score of "3" was assigned to this variable.

Subsequent to the EPA HRS procedure, which was completed in 1985, a new municipal water well has been constructed by Saegertown Borough. This well, which is 120 ft deep, is located in a sand and gravel aquifer on the opposite side of French Creek from the previously existing Borough wells 1, 2, and 3. It has been rated at 450,000 gpd and records show that more than 300,000 gpd are frequently pumped from this well (note that the average total water demand in the Borough is 370,000 gpd) (reference 24). This new

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well is in a totally different groundwater basin, given that it is on the opposite side of the regional groundwater discharge zone, French Creek. The bottom of this well is at an elevation of ~1130 ft, whereas French Creek is at an elevation of ~1100 ft. Furthermore, this well is located nearly 2 miles from the previously existing municipal wells. Thus, the Borough now has a high yield well in a different groundwater basin. This well was put into use in 1987. According to the HRS procedures in the Federal Register (40 CFR Ch. 1, Part 300, Appendix A) for assigning a value to Groundwater Use, the value assigned by EPA should now be changed from a "3" to a "2" because there is " water from an alternate unthreatened source presently available."

A more basic problem exists with regard to targets, however. Even though the SIA does overly the same sand and gravel aquifer that Borough wells 1, 2, and 3 are in , considerable detailed data has been collected regarding the flowpaths within this aquifer. Maps constructed by Ebaugh (consultant to the Borough) indicate the lateral component of groundwater flow by showing the water table configuration when Borough well #2 (the well that used to be contaminated) is pumping continuously (Figure 4) and when it is not pumping (Figure 5). The water table configuration on these maps indicate that when Borough well #2 is not pumping (Figure 5), the lateral component of groundwater flow from the GATX area is due west toward French Creek, which is the regional groundwater discharge zone. Figure 4 shows that when Borough well #2 is pumping, water flows to it primarily from the area directly east of it (i.e., the area of Spectrum and SMC), but flow from beneath the GATX area does not appear to flow to well #2 to any great extent, if at all. In his 1981 report, Ebaugh states that "Ground water in the area of the old GATX site flows westward. It is unlikely that this water moves in the direction of any of the 3 Borough water wells" (reference 19, p.2). In his 1982 report (reference 20) he states that "The cone of influence created by pumping Borough Well 2 does not extend beneath the GATX property, and therefore, contaminants in the ground water originating from the abandoned GATX facilities will not move toward Borough Well #2." This opinion is also corroborated by DER hydrogeologist Sterba who states after collecting detailed water table elevations in the SIA area that "There is no evidence of any groundwater flow paths from the vicinity of GATX towards Borough Well #2." (reference 3, p. 5). Ebaugh also concluded that "Borough well #3 (BW#3) is unlikely to receive water from the GATX site. BW#3 taps water moving regionally west and southwest down Woodcock Creek valley and off of the north wall of Woodcock Valley." (reference 19, p. 4).

Thus, even though the GATX site overlies the same aquifer as the Saegertown Borough wells #1,2, and 3, which are the targets of concern, a DER hydrogeologist and a hydrogeologist working for the Borough have both concluded that groundwater flow from beneath this site does not appear to intersect the cone of influence of these Borough wells. It appears from the water table maps (Figures 4 and 5) that flow from beneath the GATX site should intersect the Saegertown Bottling well. Analyses from this well, however, indicate that it is not contaminated by either lead or TCE (Table 6). It is interesting to note that Saegertown Bottling is, in fact, in the business of providing bottled water to people who wish to obtain uncontaminated water as an alternate to their own water supply.

The basic problem with evaluating targets that might be affected by potential contaminant sources within the SIA, then, is that (1) there is evidence that the apparent source area of the ~1980 contamination of Borough well #2 no longer contains the potential contaminant (reference 27 and Table 8) and (2) the potential contaminants present on the GATX site do not appear to be in the flowpath of the Borough municipal water wells.

The second variable in the TARGETS section of the HRS is the Distance to the Nearest Well. At the time the data on which the HRS appears to be based was collected, Borough well #2 was contaminated with TCE, and thus a distance of "0" was indicated on the HRS (Table 7). Because the Borough well has been back in use since 1984, however, and the TCE contamination has passed (Figure 3), the remaining potentially hazardous substance appears to be at GATX (though, as stated earlier, groundwater from this area does not appear to enter Borough wells). Thus, if the GATX site is considered the potential source of hazardous substances, the distance is more on the order of 600-800 ft. This would not change the value assigned of "4", however, since the "4" score is assigned for any distance less than 2000 ft (reference 1).

With regard to the "Population Served by Ground Water Wells Within a 3-Mile Radius" (Table 7), the documentation section shows a total population of 1,232, which is comprised of 942 persons served by Borough water supply, 260 persons at the County Home, and 20-acres of irrigated land at the county farm which equates to 30 persons. According to Mr. Richard Crum, Maintenance Supervisor at the County Home (phone conversation, August 3, 1988), the County Home uses water solely from its own well(s) which is located approximately 1 mile in an upgradient direction from the Borough well field in Saegertown and the GATX site. Even though this well technically does draw from the same sand and gravel aquifer as the Borough wells 1,2, and 3, it could not be influenced by possible contaminants in the

SIA because the groundwater does not flow toward the County Home well. Furthermore, Mr. Crum stated that no irrigation has taken place at the County Farm for several years. Thus, it would seem more appropriate to assign a population value of 942 instead of 1,232, which would result in a value of "2" instead of the value of "3" assigned by EPA. This was pointed out to Mr. Richard Watman of the EPA in a registered letter dated 11/22/85 from Mark Gorman, DEP Superfund Coordinator. If changed to a "2", the value for "Distance to Nearest Well/Population Served" on the Ground Water Route Work Sheet (Table 1) would be "20" rather than "30".

SUMMARY OF REASONS FOR REASSESSMENT OF THE HAZARDOUS RANKING SYSTEM PROCESS FOR THE SAEGERTOWN INDUSTRIAL AREA

Samuel S. Harrison, Hydrogeologist

1. The 1980 contamination of Saegertown Borough well #2 with Trichloroethylene and 1,1,1-Trichloroethane no longer exists. Borough well #2 was placed back in service in 1984 and continues in use to date.

2. Currently available data do not provide a sound basis for the presence of harmful concentrations of lead in the groundwater. The groundwater samples which were used to provide a basis for potential lead contamination of Borough water supplies appear to have over-represented the concentration of lead present in the groundwater because the samples were not filtered prior to acidification and analysis. Four groundwater samples collected in 1988, which **were** filtered prior to acidification and analysis, contained less than 0.005 mg/l lead.

3. Groundwater beneath the GATX site, which is considered a potential source of contaminants in the Hazardous Ranking System document, does not appear to flow to any of the Borough water wells.

4. Water wells which intercept the groundwater flowing from the Saegertown Industrial Area (Borough wells 1 and 2 and Saegertown Bottling plant well) have shown no signs of contamination by lead. Only Borough well 2 showed contamination by TCE and 1,1,1-TCE in the early 1980's and that well was placed back in service in 1984. Thus, the emperical evidence is that the wells downgradient of the Saegertown Industrial Area are not being contaminated by the Industrial Area.

5. Saegertown Borough is no longer solely dependent on the well field comprised of Borough wells 1,2, and 3, which are adjacent to the Saegertown Industrial Area. Borough well #4 was put into service in 1987 and can provide over 300,000 gallons per day of water from a groundwater basin which is not downgradient of the Saegertown Industrial Area.

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REFERENCES CITED

Note: The first 15 references comprise the documentation used by the EPA in preparing the HRS on the Saegertown Industrial Area. The remaining references, some of which were not available at the time the HRS was completed, were added by S. S. Harrison.

1. Uncontrolled Hazardous Waste Site Ranking System; A User's Manual.

2. Original Laboratory Data Sheets from Saegertown Area Groundwater Sampling with well location map.

3. Pennsylvania DER, Bureau of Water Quality Management. Summary of ground water pollution of well no. 2, Saegertown Borough, Crawford County. July 2, 1982). (Report to file by DER hydrogeologist Robert Sterba).

4. Moody and Associates, Inc., consultants to Saegertown Borough. Hydrogeologic investigation of the abandoned GATX site, borough of Saegertown, PA. Interim Status Report. September, 1980.

5. Bucek and Ebaugh, hydrogeologists and consultants to Saegertown, to Raymond Beers, President of Saegertown Borough Council. Correspondence. November 10, 1983. (In regard to TCE monitoring in the unsaturated zone; information obtained from EPA files.)

6. Pennsylvania DER. Saegertown water well survey, Saegertown Borough, Crawford County. December 1 and 2, 1980. (Information obtained from PA DER files.)

7. PA DER, Bureau of Topography and Geological Survey Groundwater Inventory System. Data sheets from a selected area of Crawford County and a guide to PA DER's Bureau of Topographic and Geological Survey Water Well Data System. 1983.

8. Geyer, Alan R. and Peter Wilshusen, for PA DER, Bureau of Topographic and Geologic Survey. Engineering Characteristics of the Rocks of PA. Environmental Geology Report no. 1, 1982.

9. Commonwealth of PA Dept. of Internal Affairs. Glacial Geologgy of NW PA. Topographic and Geological Survey Bulletin G-32. 1959.

10. NUS Corporation, FIT III. File information on wells located within the Saegertown Borough. TDD No. F3-8310-26 11/13/85.

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11. Sax, Irving N. Dangerous Properties of Industrial Materials. Fifth Edition. Litton Educational Publishing. 1979.

12. Smith, Sandy, borough of Saegertown secretary, with Thomas Pearce, NUS FIT III. Telecon. March 21, 1985.

13. Barko, Sam, administrator for Crawford County Home, with Charles Meyer, NUS FIT III. Telecon. October 11, 1985.

14. Smith, Sandy, borough of Saegertown secretary with Charles Meyer, NUS FIT III. Telecon. October 16, 1985.

15. Information indicating potential sources of Saegertown Area contamination.

16. NUS Corporation, Site Inspection of GATX, TDD NOS. IF3-83100-26/F3-8612-17, December 15, 1986. (Shows lack of TCE contamination of groundwater on GATX site. Water samples collected were not filtered and thus do not indicate actual dissolved lead content in groundwater.)

17. Graham, Walter S., EPA Potential Hazardous Waste Site Tentative Disposition, EPA Form T2070-4, July 20, 1983. (Indicates TCE level in Saegertown Borough well #2 is low enough to put well back into use and that TCE must have been caused by a one-time spill.)

18. Voltaggio, Thomas C., Chief, Superfund Branch, Hazardous Waste Managment Division, Letter to Atty. John Petruso. February 21, 1985. (Indicates lack of TCE contamination in Borough well #2 as a result of the GATX site.)

19. Ebaugh, Walter F., Hydrogeologic Investigation of the Saegertown Well Field, Saegertown , PA, Status Report. June 15, 1981. (Points out that metals analyses of well samples by DER are suspect because samples were not filtered to remove suspended sediment prior to analysis.)

20. Ebaugh, Walter F., Hydrogeologic Investigation of the Saegertown Well Field, Saegertown, PA. February 15, 1982. (Shows that groundwater from GATX site does not flow to Saegertown Borough wells and that 1980 TCE contamination of Saegertown Bourough well #2 was caused either by a spill in the late 1970's of 10 to 100 gallons of TCE or a leak which ceased or was greatly diminished by the late 1970's.)

21. Deiss, Richard A. and Assoc., Pollution Incident Prevention Plan Data, Saegertown Manufacturing Corporation (SMC). October 19, 1981. (Describes steps taken to prevent oil spill such as occurred at SMC during the winter of 1979.)

22. Gough, Wm. R., Moody and Associates., Report of Findings of Ground Water Investigation Conducted at Saegertown Manufacturing Corporation (SMC), January, 1982. (Reports non-detection of volatile organics in soils and 1 of 2 monitoring wells in the area of the 1979 SMC oil spill.)

23. Lesney, Lori., An Assessment of Groundwater Quality Beneath the Skeet and Trap Fields at the Meadville Sportsmens' Club, Meadville, PA. May 14, 1986. (Unpublished B. S. Thesis, Dept. of Environmental Science, Allegheny College. Shows that shallow groundwater beneath a lead fallout zone containing ~500 ppm lead in the upper soil zone did not have an elevated lead content.)

24. Annual reports on the municipal water supply system filed by Saegertown Borough . From DER files.

25. Records of water quality tests of Saegertown Borough municipal water wells. From DER files.

26. Records of water quality tests of Saegertown Bottling Co.'s water well. From DER files.

27. Lab certification sheets from lab analyses of samples collected from Spectrum monitoring wells and Saegertown Bottling plant well on 7/21/88.

28. Giddings, Todd, and Associates. Investigation of Former GATX Site, Saegertown, PA. December 12, 1984. (No excessive lead or TCE found in 22 leached soil samples from bore holes. TCE present in water from some bore holes.)

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ASSESSMENT OF THE EPA HAZARDOUS RANKING SYSTEM PROCESS FOR THE SAEGERTOWN INDUSTRIAL AREA

Samuel S. Harrison
August, 1988

FIGURES

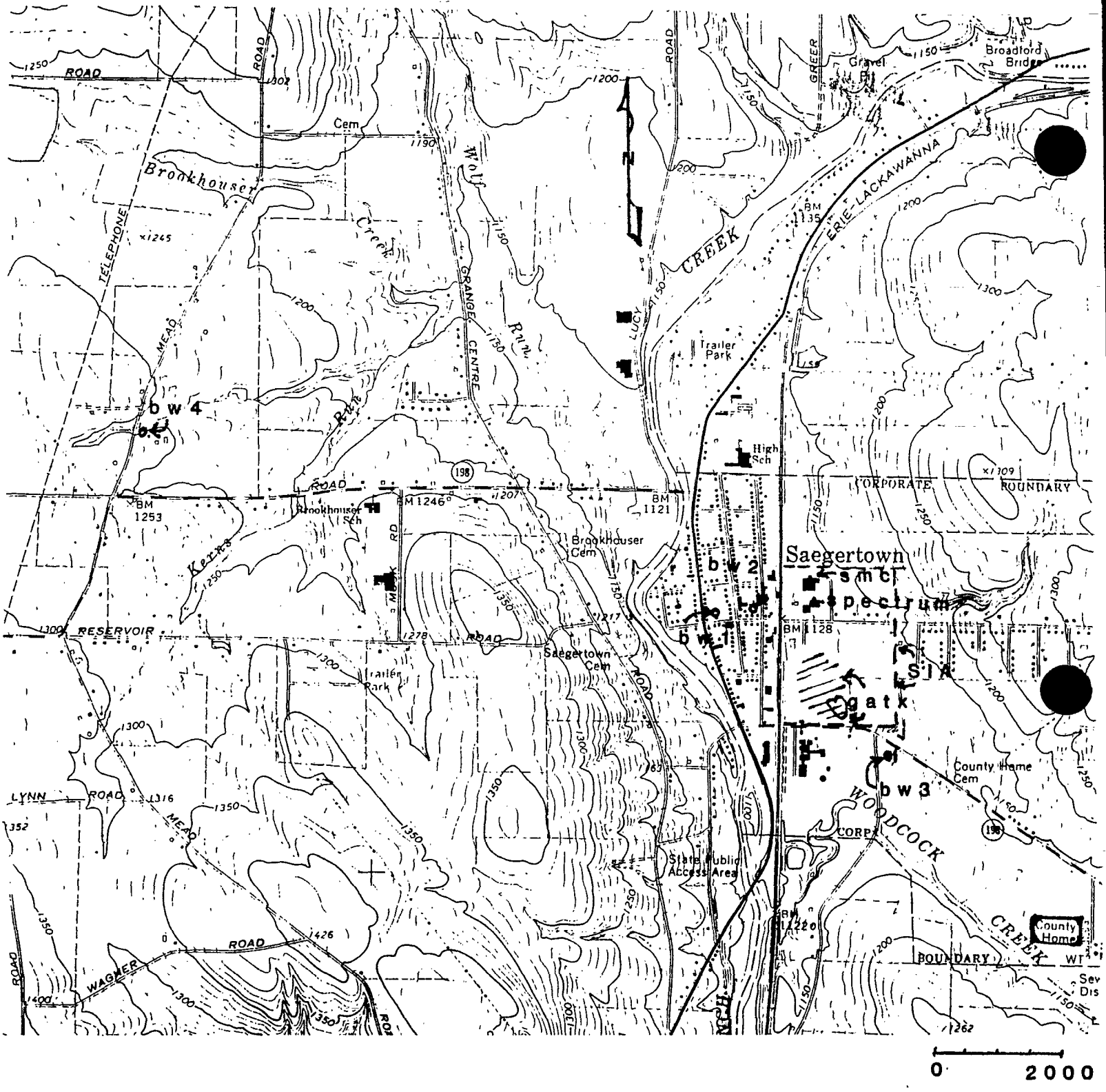


Figure 1. Location map of the Saegertown area showing Saegertown Borough water wells (bw 4, etc.), Saegertown Industrial Area (SIA), Saegertown Manufacturing (SMC), Spectrum Control, Inc., and former GATX site.

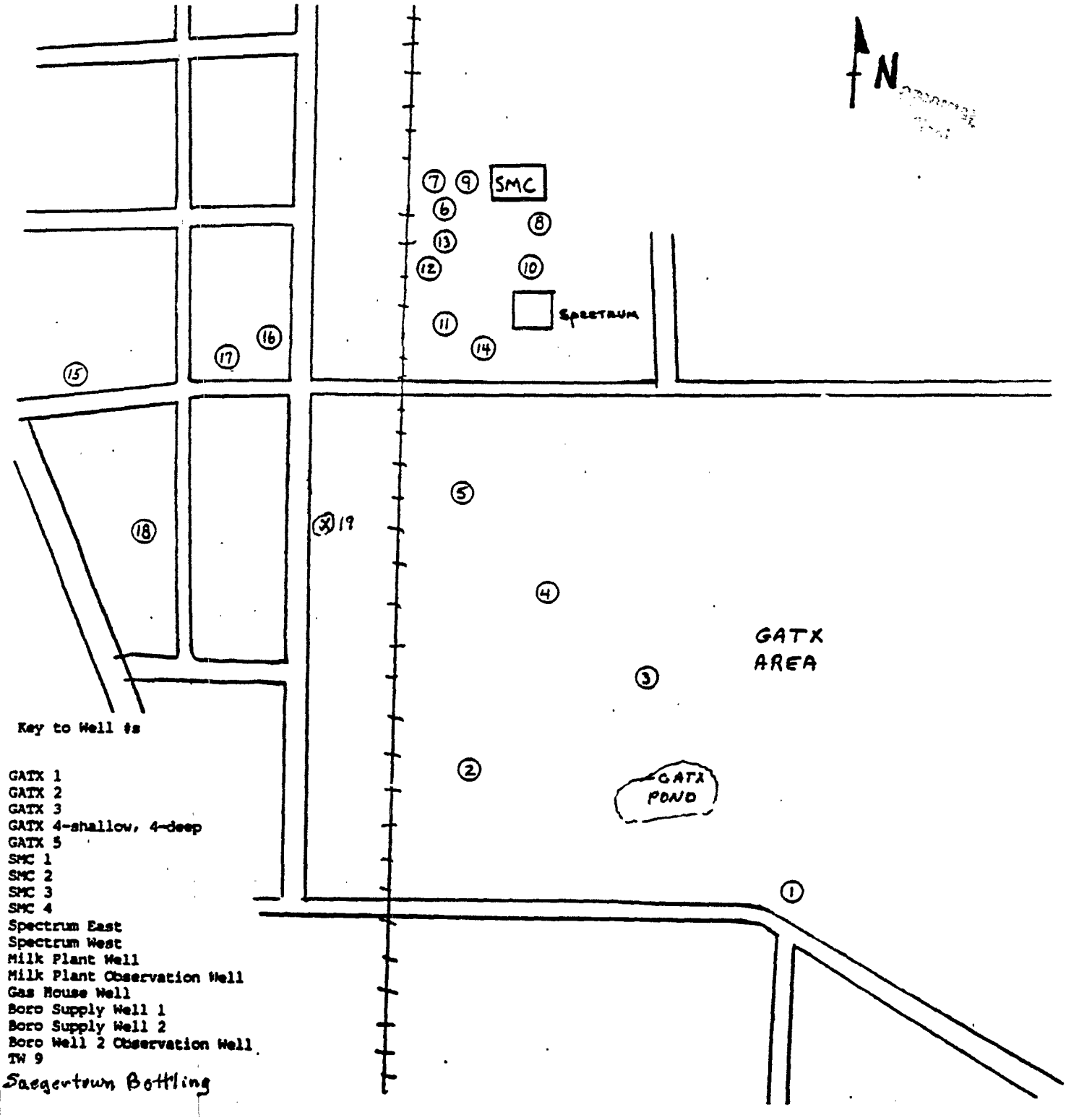
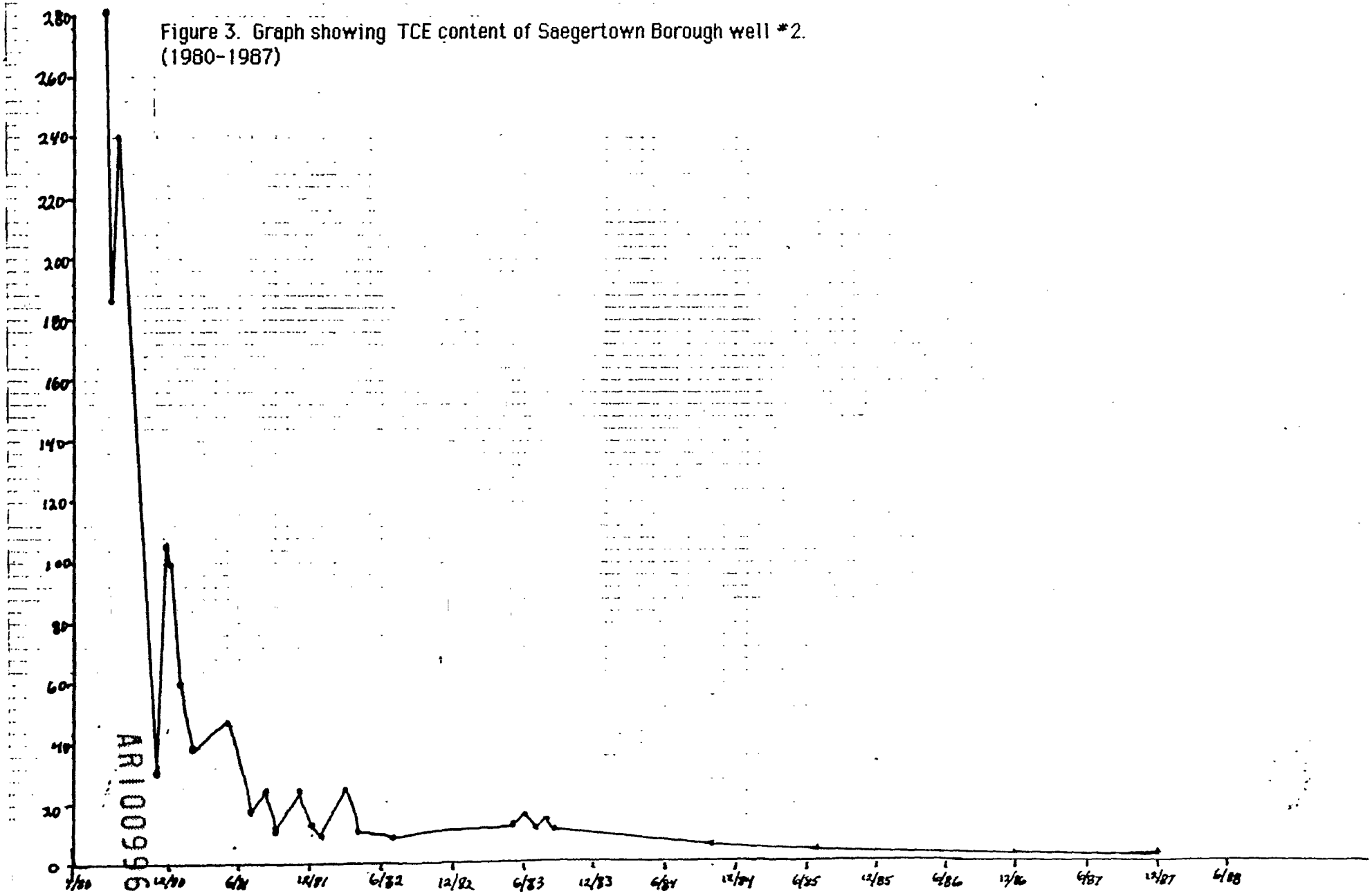


Figure 2. Map showing location of monitored wells referred to in this report.

Figure 3. Graph showing TCE content of Saegertown Borough well #2.
(1980-1987)



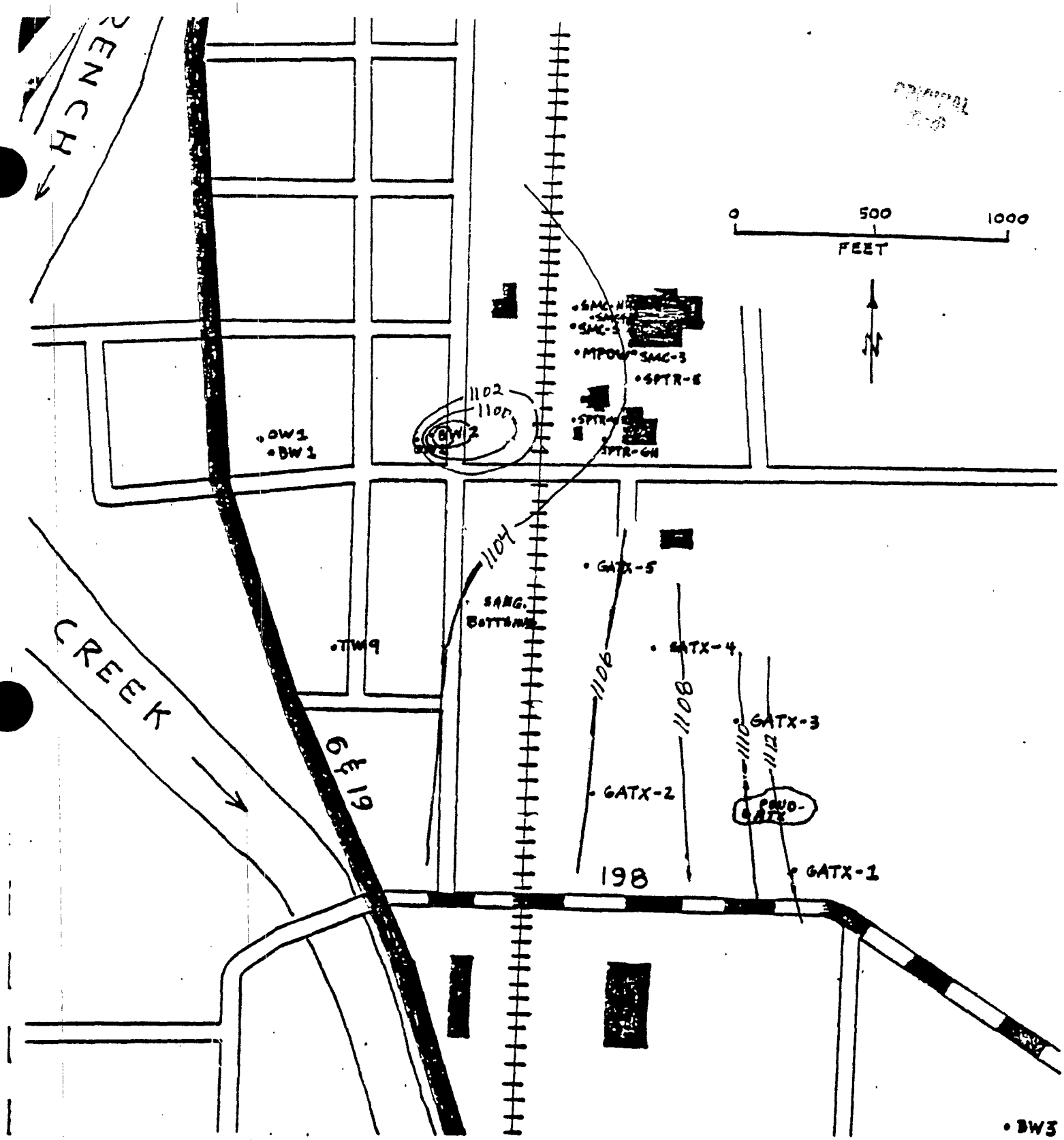


Figure 4. Map showing the water table configuration in the Saegertown Industrial Area with Borough well #2 pumping. Data collected by Ebaugh (reference 20) on 10/29/81. Modified from a map prepared by Ebaugh.

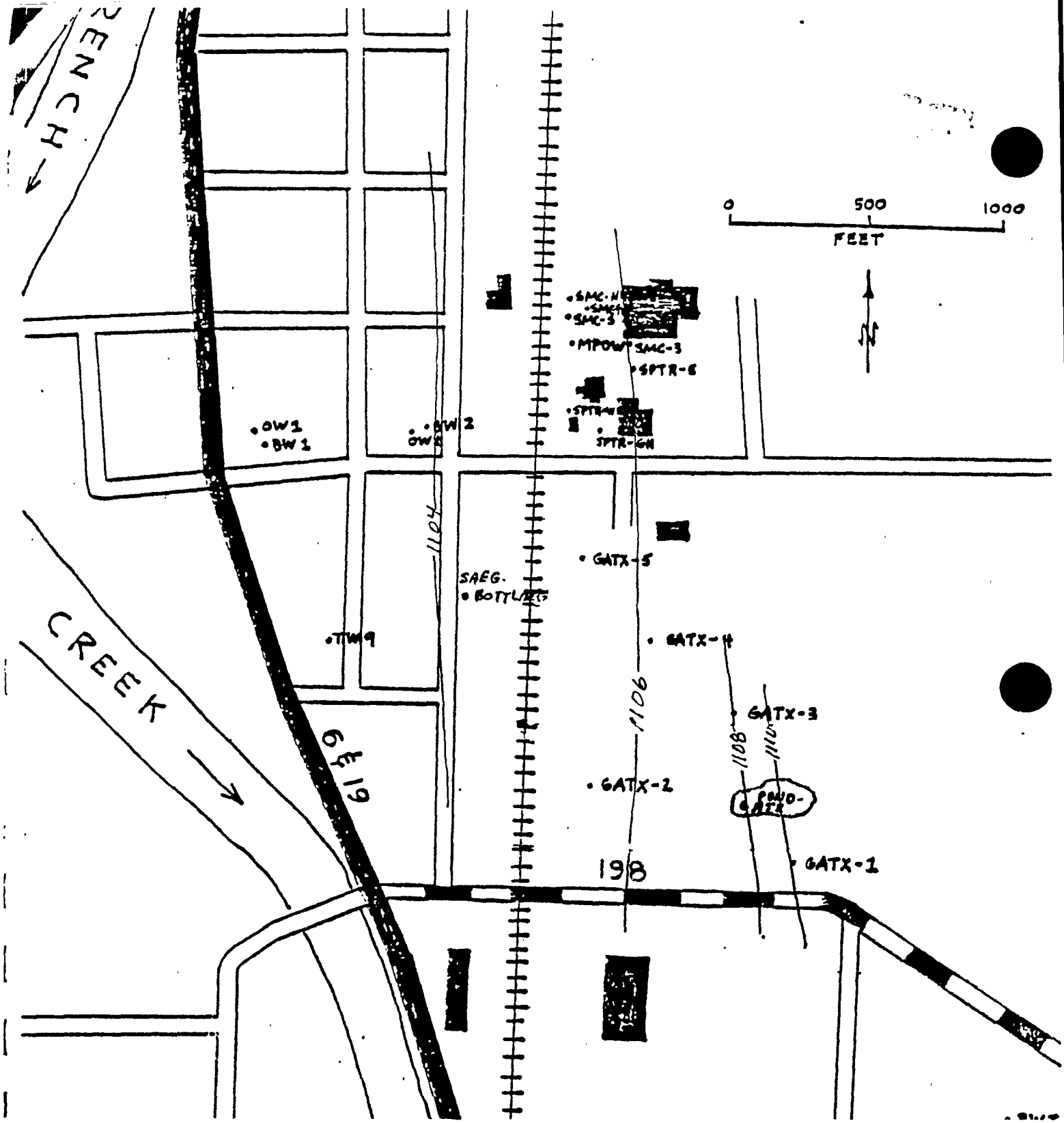


Figure 5. Map showing the water table configuration in the Saegertown Industrial Area with Borough well #2 not pumping. Data collected by Ebaugh (reference 20) on 10/21/81. Modified from a map prepared by Ebaugh.

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ASSESSMENT OF THE EPA HAZARDOUS RANKING SYSTEM PROCESS FOR THE SAEGERTOWN INDUSTRIAL AREA

Samuel S. Harrison
August, 1988

APPENDICES

APPENDIX I. Saegertown Industrial Area/Borough Water Well #2: Sequence of Events

APPENDIX II. EPA Hazardous Ranking System (HRS) Document for the Saegertown Industrial Area (SIA)

SAEGERTOWN INDUSTRIAL AREA/BOROUGH WATER WELL #2

Sequence of Events

Prepared by Samuel S. Harrison
August, 1988

Mid 1950's to 1965 -- GATX tank rail car cleanout facility in operation

1964 - Present -- Saegertown Manufacturing Company (SMC) in operation

1969-1988 -- Spectrum in operation

2/79 -- Flooding at SMC results in oil spill

6/79 -- Oil-contaminated soil at SMC removed from site

4/80 -- Routine sampling at LORD Corporation's Hughson Chemical plant cooling tower detects 12 volatile organic solvents, later determined to be coming from Saegertown Borough water lines.

4/80 -- Saegertown Well #2 found to be contaminated with TCE and 1-1-1 Trichloroethane

6/80 -- Saegertown Well #2 taken out of service and continually pumped to waste; Borough hires Moody and Assoc. to investigate source of contamination; Borough water users given a "Boil Water" notice on 6/24/88.

9/80 -- Moody and Associates complete report on investigation of the GATX site and suggest it is the source of contamination of Borough Well 1#2.

3/81 -- Saegertown Borough hires hydrogeologist Walter Ebaugh to study source of TCE contamination

6/15/81 -- Ebaugh completes status which questions Moody suggestion that GATX is source of TCE contamination. He also points out that high levels of lead in earlier groundwater samples were from samples which were not filtered and thus the data are suspect.

11/81 -- SMC constructs two new monitoring wells at the insistance of DER

1/82 -- Moody and Assoc. complete report on the soils and groundwater at SMC. No evidence of TCE contamination of soils found. Of four monitoring wells, TCE found in only one.

2/15/82 -- Ebaugh completes report on TCE source, indicating the source was from the Spectrum/SMC area and **not** the GATX area. He shows that groundwater from GATX does not flow toward Saegertown Borough wells. He states that the TCE contamination of Borough Well #2 was caused by a 10- to 100-gallon spill which occurred in the late 1970's or a leak which ceased in the late 1970's. He re-emphasizes that lead values for earlier groundwater samples are questionable since the samples were not filtered prior to acidification and analysis.

3/82 -- Borough pumps milk plant well (near Spectrum/SMC) to waste in attempt to prevent TCE from reaching Borough Well #2.

4/82 -- DER hydrogeologist Sterba collects samples from Spectrum and SMC monitoring wells which show a dramatic decrease in TCE concentration

7/2/82 -- DER hydrogeologist Robert Sterba completes memo to file which indicates Moody report is incorrect and that flow from GATX area is not toward Borough water wells. Sterba states that TCE came from the area of Spectrum and SMC.

3/84 -- TCE content of Borough Well #2 low enough that DER gives approval to put it back into service

7/84 -- NUS conducts study of GATX site. Samples from GATX pond and soil samples show TCE, PCE, and other volatile organics, and lead. Water samples were not filtered and thus the validity of the lead content of the groundwater is questionable . NUS finds little evidence of TCE in groundwater.

12/21/84 -- Todd Giddings and Assoc. complete study of 13 GATX soil borings. Leach tests of soils show no excessive lead or TCE . Three out of five water samples from bore holes contain TCE in excess of 0.05 mg/l.

11/20/85 -- EPA completes Hazardous Ranking System (HRS) on Saegertown Industrial Area resulting in a score of 33.62

12/15/86 -- NUS report on GATX site completed (samples collected in 7/84)

1987 -- New Borough well #4 placed in service with capacity of 450,000 gpd. This well is in a different groundwater drainage basin than Borough wells 1, 2, and 3.

3/20/87 -- EPA completes quality assurance check on Saegertown Industrial Area

7/21/88 -- S. S. Harrison tests two monitoring wells on Spectrum property, Milk Plant well, and Saegertown Bottling plant well. Samples (filtered) show <0.005 ppm lead. Unfiltered samples show less than 2 ppb TCE.

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ASSESSMENT OF EPA HAZARDOUS RANKING SYSTEM PROCESS FOR THE SAEGERTOWN INDUSTRIAL AREA

Samuel S. Harrison
August, 1988

TABLES

Table 1. HRS Groundwater Work Sheet for Saegertown Industrial Area prepared by EPA.

Ground Water Route Work Sheet

	Rating Factor	Assigned Value (Circle One)	Multiplier	Score	Max. Score	Ref. (Section)
1	Observed Release	0 45	1	45	45	3.1
	If observed release is given a score of 45, proceed to line 4. If observed release is given a score of 0, proceed to line 2.					
2	Route Characteristics					3.2
	Depth to Aquifer of Concern	0 1 2 3	2		6	
	Net Precipitation	0 1 2 3	1		3	
	Permeability of the Unsaturated Zone	0 1 2 3	1		3	
	Physical State	0 1 2 3	1		3	
	Total Route Characteristics Score			0	15	
3	Containment	0 1 2 3	1	0	3	3.3
4	Waste Characteristics					3.4
	Toxicity/Persistence	0 3 6 9 12 15 (18)	1	18	18	
	Hazardous Waste Quantity	0 (1) 2 3 4 5 6 7 8	1	1	8	
	Total Waste Characteristics Score			19	26	
5	Targets					3.5
	Ground Water Use	0 1 2 (3)	3	9	9	
	Distance to Nearest Well/Population Served	0 4 6 8 10 / 12 16 18 20 / 24 (30) 32 35 40	1	30	40	
	Total Targets Score			39	49	
6	If line 1 is 45, multiply 1 x 4 x 5 / If line 1 is 0, multiply 7 x 3 x 4 x 5			32345	57,330	
7	Divide line 6 by 57,330 and multiply by 100	S_{gw} = 58.16				

FIGURE 2
GROUND WATER ROUTE WORK SHEET

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3/20/87

AR101004

Table 2. Documentation for **Section 1: Observed Release**, as presented in the EPA HRS for the Saegertown Industrial Area.

GROUND WATER ROUTE

1 OBSERVED RELEASE

Contaminants detected (5 maximum):

1,1,1-trichloroethane (1,1,1-TCE)
trichloroethylene (TCE)
lead

Rationale for attributing the contaminants to the facility:

The borough of Saegertown's municipal water supply well no.2 showed high concentrations of TCE and 1,1,1-TCE on November 23, 1981, during a sampling conducted by the PA Department of Environmental Resources (PADER). Upgradient samples indicated high concentrations throughout the industrialized area of Saegertown; 1 well, located above the industrial area, tested clean. Sampling prior to and after November 23, 1981, conducted by PADER also indicated high concentrations throughout the industrial area. Several potential sources of the contamination have been identified.

Lead has been found at high concentrations throughout the industrialized area as well. The background well, SMC no. 3, has not shown contamination with any of the above compounds. Although the borough well has not shown lead as a contaminant, the other area wells, which demonstrate high volatile organic contamination, also show lead contamination. Lead, a substance of concern in drinking water, was reported at levels well above background and drinking water criteria, in some of the wells sampled.

All wells sampled withdraw water from glacial deposits consisting of heterogeneous unconsolidated clays, silts, sands, and gravels.

Reference nos. 2, 3, 4, 9 and 15

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Steve Chang
AR101005
3/20/87

TABLE 3: TCE AND LEAD CONTENT IN SAEGERTOWN BOROUGH WELLS 1 AND 2

DATE	BORO WELL #2 TCE (PPB)	BORO WELL #1 TCE (PPB)	BORO WELL #2 LEAD (PPM)	BORO WELL #1 LEAD (PPM)
6/17/80	281	2		
6/18/80			0.01	0.02
6/24/80	230	<3		
6/27/80	256	<3		
6/30/80	249	<3		
7/2/80	185			
7/8/80		<3		
7/10/80	204	<3		
7/14/80	188	<2		
7/15/80		<2		<0.1
7/22/80	240			
11/12-13/80	31			
12/3/80	106	<1	0.008	
12/8/80		1		
12/11/80	99	<1	<0.01	<0.01
1/8/81	60			
2/19/81	38			
5/11/81	47			
6/30/81	18			
8/6/81	24			
9/4/81	13			
11/6/81	25			
12/6/81	13			
1/6/82	10			
3/19/82	25			
4/26/82	11			
7/13/82	7	1		
5/4/83	14			
5/18/83	17			
6/6/83	17			
7/19/83	13	2		
8/4/83	15			
8/17/83	12			
10/23/84	7	1		
7/5/85	5			
12/87	3			

Note: Water samples collected from the Borough office contained 0.006 mg/l of lead on 10/17/85 and 0.005 mg/l of lead on 5/16/88.

Table 4. Documentation for **Section 2: Route Characteristics**, as presented in the EPA HRS for the Saegertown Industrial Area.

ORIGINAL (Red)

2 ROUTE CHARACTERISTICS

Depth to Aquifer of Concern

Name/description of aquifer(s) of concern:

The borough of Saegertown is situated within the glacial confines of northwestern Pennsylvania. The ice activity in the area was such that it deposited a heterogenous assortment of clays, silts, sands, and gravels throughout the area. These unconsolidated materials range in depth from a few feet to more than 70 feet thick. Due to the porosity of the glacial deposits, the aquifer can be expected to yield large amounts of water. The bedrock of the area underlying Saegertown is shale, which cannot yield large amounts of water but, when used for domestic supplies, should be fine. The borough of Saegertown obtains its water from 3 wells tapping the unconsolidated sands and gravels. Well no. 1 is 60 feet deep, well no. 3 is 59.5 feet, and well no. 2 is 49 feet deep. The industrialized area immediately northeast of Saegertown's municipal supply well nos. 1 and 2 is also underlain by glacial deposits. This is evidenced by the cross sectional representation of wells shown in reference no. 5, water depths in wells in the industrialized section of Saegertown as reported in reference no. 6, and logs of these wells provided in reference no. 7. The bedrock underlying the site area is from the Marcellus and Pocono Formations, consisting of interbedded sandy shale, sandstone, mudstone, and siltstone. This formation has a low permeability and there is no evidence of a hydrologic connection between the 2 formations. Therefore, the aquifer of concern is the glacial deposits.

Reference nos. 3, 4, 5, 6, 7, 8, 9, and 10

Depth(s) from the ground surface to the highest seasonal level of the saturated zone (water table(s)) of the aquifer of concern:

One of Saegertown's observation wells, located in the gravel of the glacial drift, has a depth to water of 9 feet, 10 inches, as measured from the ground surface.

Reference no. 10

Depth from the ground surface to the lowest point of waste disposal/storage:

N/A

AR101007

Net Precipitation

Mean annual or seasonal precipitation (list months for seasonal):

N/A

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Steve Chang
3/20/87

Table 5. Documentation for **Section 4: Waste Characteristics**, as presented in the EPA HRS for the Saegertown Industrial Area.

4 WASTE CHARACTERISTICS

Toxicity and Persistence

Compound(s) evaluated:

	Toxicity	Persistence	Matrix Value
1,1,1-trichloroethane	2	2	12
trichloroethylene	2	2	12
lead	3	3	18

Compound with highest score:

Lead

A value of 18 was assigned.

Reference nos. 1, 2, 3 and 11

Hazardous Waste Quantity

Total quantity of hazardous substances at the facility, excluding those with a containm score of 0 (Give a reasonable estimate even if quantity is above maximum):

The total quantity of waste is unknown. A value of 1 has been assigned for waste quantity, as the contaminants have been detected in the municipal and monitoring wells.

A value of 1 was assigned.

Reference nos. 2, 3 and 4

Basis of estimating and/or computing waste quantity:

Hazardous waste contamination has been detected in the groundwater.

Reference nos. 1 (page 19) and 2

QA
AR101008 Steve Chang
3/20/87

TABLE 6. TCE AND LEAD DATA FOR SAEGERTOWN BOTTLING CO. WELL

Date	TCE in ppb	LEAD in ppm
6/26/80	<3	
12/6/84		<.001
12/17/85	<2	
12/27/87		.002
7/88		.012
7/21/88	<1	<.005

Table 7. Documentation for **Section 5: Targets**, as presented in the EPA HRS for the Saegertown Industrial Area.

5 TARGETS

Groundwater Use

Use(s) of aquifer(s) of concern within a 3-mile radius of the facility:

The Saegertown Municipal Water Supply system is using the alluvial/glaciofluvial-glaciolacustrine aquifer, consisting of sands and gravels of the glacial drift. There is no other source of potable water available.

A value of 3 was assigned.

Reference nos. 1, 3, 4, 8, 13, and 14

Distance to Nearest Well

Location of nearest well drawing from aquifer of concern or occupied building not served by a public water supply:

The distance to the nearest well is 0 feet.

Distance to above well or building:

A distance of 0 feet was used because well no. 2 was used as a municipal source; contamination has been detected in this well.

A value of 4 was assigned.

Reference nos. 1 (page 25), 2, and 3

Population Served by Ground Water Wells Within a 3-Mile Radius

Identified water-supply well(s) drawing from aquifer(s) of concern within a 3-mile radius and populations served by each:

The Saegertown Municipal Water Supply system is using the sands and gravels of the Glacial Drift, which is its sole source of supply and the only aquifer which can yield the large quantities of water needed by the municipal supply. The municipal supply services 942 persons and extends service to the Saegertown corporate boundary in the south and just over the corporate boundary to the north, up to the trailer park. Also using the Glacial Drift deposits for their source of potable water is the Crawford County Home, which services approximately 260 persons.

Reference nos. 2, 3, 4, 13, and 14, 12.

Computation of land area irrigated by supply well(s) drawing from aquifer(s) of concern within a 3-mile radius, and conversion to population (1.5 people per acre):

A total of between 10 and 20 acres are used for farming on the Crawford County Home property. The land is irrigated by their well, which is dug into the glacial deposits of the area. The total population is estimated to be 30 persons (population count figure obtained by multiplying 20 acres times 1.5 persons for 30 persons serviced).

Reference nos. 13 and 14

Total population served by groundwater within a 3-mile radius:

The total population served by the aquifer of concern, sands, and gravels of the glacial drift deposits includes Saegertown Municipal Supply, which services 942 persons, the County Home, which services another 260 persons, and the approximately 20 acres that are farmed and irrigated by the home wells, for a 30-person population. The total population serviced by the aquifer of concern, therefore, is 1,232 persons.

A value of 3 was assigned.

A matrix value of 30 was assigned.

Reference nos. 12, 13, and 14

QA
Steve Chang
3/20/87

Table 8. TCE, 1,1,1-TCE, and Lead Data for Wells on the Spectrum Property. Samples collected 7/21/88 and filtered prior to acidification and analysis.

WELL	TCE	1,1,1-TCE	LEAD
Spectrum East Mon. Well	<1 ppb	<1 ppb	<.005 mg/l
Spectrum West Mon. Well	<1	<1	<.005
Milk Plant Obs. Well	1.5	<1	<.005